



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Comte, et al

Serial No: 10/659,785

Filing Date: 9/9/2003

Title: Cerammable Mineral Glass,
Glass-Ceramic Articles and
Preparation Hereof

Group Art Unit: 1755

Examiner: Karl E Group

BRIEF ON APPEAL

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Sir:

BRIEF ON APPEAL

This Brief supports the appeal to the Board of Patent Appeals and Interferences from the final rejection dated May 3, 2005 in the above-captioned application. Applicant filed Notice of Appeal on August 3, 2005, which was received by the Office on August 5, 2005, and now submits this Brief, as required by 37 C.F.R. § 41.37.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Eurokera.

II. RELATED APPEALS AND INTERFERENCES

With respect to the appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal, there are no such appeals or interferences.

III. STATUS OF CLAIMS

Claims 1-5 and 12-17 were rejected in the final Office Action dated May 3, 2005. Claims 1-5 and 12-14 are as originally filed. Claims 15-17 were previously presented. Claims 6-11 were previous canceled without prejudice.

IV. STATUS OF AMENDMENTS

All previous claim amendments were entered by the Examiner. No amendment was

made after the final Office action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter in the appealed claims is summarized as follows:

According one aspect, the present invention thus provides a mineral glass having a composition by weight (expressed in percentages of oxides), consisting essentially of:

SiO₂ 65 - 70

Al₂O₃ 18 - 20.5

Li₂O 2.5 - 3.8

MgO 0.55 - 1.5

ZnO 1.2 - 2.8

BaO 0 - 1.4

SrO 0 - 1.4

with BaO + SrO 0.4 - 1.4

with MgO + BaO + SrO 1.1 - 2.3

Na₂O 0 - < 1

K₂O 0 - < 1

with Na₂O + K₂O 0 - < 1

with $\frac{2.8\text{Li}_2\text{O} + 1.2\text{ZnO}}{5.2\text{MgO}} > 1.8$

TiO₂ 1.8 - 3.5

ZrO₂ 0.8 - 2.5

with $2.2 < \frac{\text{TiO}_2}{\text{ZrO}_2} < 4.5,$

and, optionally, an effective, non-excess amount of at least one fining agent.

In a second aspect of the invention, it is provided a glass-ceramic article made of the mineral glass described supra. Depending on the ceramming schedule, the glass-ceramic material can be prepared to have, inter alia, β -quartz or β -spodumene as the predominant crystalline phase.

VI. GROUND OF REJECTION TO BE REVIEWED IN APPEAL

Claims 1-5 and 11-17 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

VII. ARGUMENTS

A. Applicable Law

Regarding the specification of a patent application, it “shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.” 35 U.S.C. § 112, second paragraph. For a claim to comply with § 112, paragraph 2, it must satisfy two requirements: first, it must set forth what “the applicant regards as his invention,” and second, it must do so with sufficient particularity and distinctness, i.e., the claim must be sufficiently “definite.” See Solomon v. Kimberly-Clark Corp., 216 F.3d 1371, 55 USPQ.2d 1278 (Fed. Cir. 2000). The primary purpose of this requirement of definiteness in claims is to provide clear warning to others as to what constitutes infringement of the patent. See Donald S. Chisum, 3 Chisum on Patents, § 8.03. Determining whether a claim is definite requires an analysis of whether one skilled in the art would understand the bounds of the claim when read in light of the specification. If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, § 112 demands no more. Personalized Media, 161 F.3d at 705, 48 USPQ.2d at 1888. As a general matter, it is well-established that the determination whether a claim is invalid as indefinite depends on whether those skilled in the art would understand the scope of the claim when the claim is read in light of the specification. See Atmel, 198 F.3d at 1378, 53 USPQ.2d at 1227-28. The MPEP provides:

In reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, >by providing clear warning to others as to what constitutes infringement of the patent<. See, e.g., *Solomon v. Kimberly-Clark Corp.*, 216 F.3d 1372, 1379, 55 USPQ2d 1279, 1283 (Fed. Cir. 2000). See also *In re Larsen*, No. 01-1092 (Fed. Cir. May 9, 2001) (unpublished) (The preamble of the *Larsen* claim recited only a hanger and a loop but the body of the claim positively recited a linear member. The court observed that the totality of all the limitations of the claim and their interaction with each other must be considered to ascertain the inventor's contribution to the art. Upon review of the claim in its entirety, the court concluded that the claim at issue apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112 paragraph 2.).

>If the language of the claim is such that a person of ordinary skill in the art could not interpret the metes and bounds of the claim so as to understand how to avoid infringement, a rejection of the claim under 35 U.S.C. 112, second paragraph, would be appropriate. See *Morton Int'l, Inc. v. Cardinal Chem.*

Co., 5 F.3d 1464, 1470, 28 USPQ2d 1190, 1195 (Fed. Cir. 1993). However, if the language used by applicant satisfies the statutory requirements of 35 U.S.C. 112, second paragraph, but the examiner merely wants the applicant to improve the clarity or precision of the language used, the claim must not be rejected under 35 U.S.C. 112, second paragraph, rather, the examiner should suggest improved language to the applicant.

The MPEP, Eighth Edition, 2173.02 (emphasis added).

B. The rejection

The Examiner asserted that

Claims 1 and 12 stand rejected for claiming amounts of ZrO₂ that are not possible while maintaining the claimed ratio of TiO₂/ZrO₂ between 2.2 and 4.5. For example if the ZrO₂ content were 2.5 the amount of TiO₂ would have to be at a minimum 5.5 wt% (to maintain a ratio of 2.2) which is outside the claimed range. For compositions to have the claimed TiO₂/ZrO₂ the maximum amount of ZrO₂ would be 1.59 wt%. $3.5/1.59 = 2.2$. Applicants argue one of ordinary skill in the art can determine what compositions fall inside and outside the [claimed] limitations. This is not persuasive because amounts of ZrO₂ claimed 1.59 wt% to 2.5 wt% are not possible while maintaining the claimed TiO₂/ZrO₂ ratio. It is not clear whether the claimed TiO₂/ZrO₂ ratio is a required limitation of the claim if amounts of ZrO₂ are being claimed that are not possible to maintain the ratio.

Emphasis added.

Applicant submits that all claim limitations should be read in light of each other and as a whole when interpreting the meets and bounds of a claim. Claims 1 and 12 define the amounts of TiO₂ and ZrO₂ in the composition of the claimed glass and glass-ceramic as meeting three conditions:

- (a) TiO₂ 1.8 - 3.5;
- (b) ZrO₂ 0.8 - 2.5; and
- (c) $2.2 < \frac{\text{TiO}_2}{\text{ZrO}_2} < 4.5$.

All three limitations must be met for a composition to fall within the claimed range. One cannot consider only one of the three without regard to the other two. One cannot consider only two of the three without regard to the third. One cannot simply consider limitations (a) and (c) without regard to limitation (b) for example. All three must be considered as a whole. The ranges of TiO₂ and ZrO₂ with all limitations (a), (b) and (c) taken into consideration are certainly narrower than ranges of them defined by (a) and (b) only. A combination of (a), (b) and (c) constitutes a subset of a combination of (a) and (b) only.

The Examiner appears to have the view that without the limitation (c) above (such as by deleting this limitation from the concerned claims), the current rejection under 35 U.S.C. § 112, second paragraph would be withdrawn. Thus, the Examiner appears to have the view that the ranges of TiO_2 and ZrO_2 defined by a combination of (a) and (b) would be definitive under 35 U.S.C. § 112, second paragraph. Indeed it has been allowed in numerous US patents to list only individual component ranges in claims without further defining a range of their ratio. If this larger range as defined by a combination of (a) and (b) is definitive, it is difficult for Applicant to understand why a subset thereof defined by further limiting the combination is not definitive.

The Examiner illustrated the asserted indefiniteness by giving certain examples that clearly do not meet all requirements of (a), (b) and (c). Clearly these examples do not fall within the claimed range of the concerned claims.

Applicant submits that the limitation of $\text{TiO}_2/\text{ZrO}_2$ in the claims is required limitation of the claims. One of ordinary skill in the art can easily determine whether a particular composition falls inside or outside of these limitations. One of ordinary skill in the art can easily determine the permitted range of ZrO_2 amount in the composition for any given amount of TiO_2 in the composition. One of ordinary skill in the art can easily determine the permitted range of TiO_2 amount in the composition for any given amount of ZrO_2 in the composition. Therefore, the meets and bounds of the invention in terms of the amounts of TiO_2 and ZrO_2 are clearly defined in claims 1 and 12.

For example, where the amount of TiO_2 is 1.8, the permitted ZrO_2 range as calculated from (c) $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ is $0.4 < \text{ZrO}_2 < 0.82$. Taking (b) $0.8 < \text{ZrO}_2 < 2.5$ into consideration, the permitted ZrO_2 range according to claim 1 or claim 12 would be $0.8 < \text{ZrO}_2 < 0.82$.

For another example, where the amount of TiO_2 is 3.5, the permitted ZrO_2 range as calculated from (c) $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ is $0.78 < \text{ZrO}_2 < 1.59$. Taking (b) $0.8 < \text{ZrO}_2 < 2.5$ into consideration, the permitted ZrO_2 range according to claim 1 or claim 12 would be $0.8 < \text{ZrO}_2 < 1.59$.

For another example, where the amount of ZrO_2 is 0.8, the permitted TiO_2 range as calculated from (c) $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ is $1.76 < \text{TiO}_2 < 3.6$. Taking (a) $1.8 < \text{TiO}_2 < 3.5$ into consideration, the permitted TiO_2 range according to claim 1 or claim 12 would be $1.8 < \text{TiO}_2 < 3.5$.

For still another example, where the amount of ZrO_2 is 2.5, the permitted TiO_2 range as calculated from (c) $2.2 < \text{TiO}_2/\text{ZrO}_2 < 4.5$ is $5.5 < \text{TiO}_2 < 9.9$. Taking (a) $1.8 < \text{TiO}_2 < 3.5$ into consideration, one of ordinary skill in the art would understand that any composition having $\text{ZrO}_2 = 2.5$ falls outside of the scope of claim 1 or claim 12.

The limitations (a), (b) and (c) as to the amounts of TiO_2 and ZrO_2 as presented in claims 1 and 12 do clearly define the meets and bounds of their respective ranges. One of ordinary skill in the art, by using simple arithmetic illustrated above, can very easily determine whether a particular composition falls within the claimed scope or not. They might not be the most precise way of defining the TiO_2 and ZrO_2 ranges. Nonetheless, § 112, second paragraph does not require the most precise and the most concise way to define the invention.

C. Conclusion

In conclusion, Applicant requests a reversal of the grounds of rejection maintained by the Examiner.

If there are any other fees due in connection with the filing of this Brief on Appeal, please charge the fees to our Deposit Account No. 03-3325. Applicant believes a one month of extension of time is necessary and sufficient to render this Brief timely. If additional fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

The undersigned attorney has been granted limited recognition by the Office of Enrollment and Discipline of the USPTO to practice before the USPTO in capacity as an employee of a Corning Incorporated.

Please direct any phone call to the undersigned at (607) 248-1253.

Respectfully submitted,

Dated: October 12, 2005

By: _____

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Siwen Chen (Signature)

VIII. CLAIMS APPENDIX

The claims involved in the appeal are listed as follows:

1. (*Original*) A mineral glass having a composition, expressed in percentages by weight of oxides, which essentially consists of:

SiO₂ 65 - 70

Al₂O₃ 18 - 20.5

Li₂O 2.5 - 3.8

MgO 0.55 - 1.5

ZnO 1.2 - 2.8

BaO 0 - 1.4

SrO 0 - 1.4

with BaO + SrO 0.4 - 1.4

with MgO + BaO + SrO 1.1 - 2.3

Na₂O 0 - < 1

K₂O 0 - < 1

with Na₂O + K₂O 0 - < 1

with $\frac{2.8\text{Li}_2\text{O} + 1.2\text{ZnO}}{5.2\text{MgO}} > 1.8$

TiO₂ 1.8 - 3.5

ZrO₂ 0.8 - 2.5

with $2.2 < \frac{\text{TiO}_2}{\text{ZrO}_2} < 4.5;$

and, optionally, an effective, non-excess amount of at least one fining agent.

2. (*Original*) The mineral glass according to claim 1, wherein $2.3 < \frac{\text{TiO}_2}{\text{ZrO}_2} <$

4.5.

3. (*Original*) The mineral glass according to claim 1, the composition of which further contains an effective amount of at least one coloring agent selected from CoO, Cr₂O₃, Fe₂O₃, MnO₂, NiO, V₂O₅ and CeO₂.

4. (*Original*) The mineral glass according to claim 1, the composition of which further contains 0.03 to 1 % by weight of V₂O₅ with

$$3.8 \% \leq \text{TiO}_2 + \text{ZrO}_2 + 5\text{V}_2\text{O}_5 \leq 6 \%$$

5. (*Original*) The mineral glass according to claim 1 which does not further contain any coloring agent, wherein the Al_2O_3 content is between 19.8 and 20.5 % and ZrO_2 content is between 1.2 and 2.5 %.

6-11. (*Canceled*)

12. (*Original*) A glass-ceramic article having a composition, expressed in percentages by weight of oxides, consisting essentially of:

SiO_2 65 - 70

Al_2O_3 18 - 20.5

Li_2O 2.5 - 3.8

MgO 0.55 - 1.5

ZnO 1.2 - 2.8

BaO 0 - 1.4

SrO 0 - 1.4

with $\text{BaO} + \text{SrO}$ 0.4 - 1.4

with $\text{MgO} + \text{BaO} + \text{SrO}$ 1.1 - 2.3

Na_2O 0 - < 1

K_2O 0 - < 1

with $\text{Na}_2\text{O} + \text{K}_2\text{O}$ 0 - < 1

with $\frac{2.8\text{Li}_2\text{O} + 1.2\text{ZnO}}{5.2\text{MgO}} > 1.8$

TiO_2 1.8 - 3.5

ZrO_2 0.8 - 2.5

with $2.2 < \frac{\text{TiO}_2}{\text{ZrO}_2} < 4.5;$

and, optionally, an effective, non-excess amount of at least one fining agent.

13. (*Original*) The glass-ceramic article of according to claim 12, wherein 2.3

$$< \frac{\text{TiO}_2}{\text{ZrO}_2} < 4.5.$$

14. (*Original*) The article according to claim 12 which is a cooktop plate, a cookware, a microwave oven bottom tray, a woodstove window, a fire protection door, or a fire protection window.

15. (*Previously Presented*) The article according to claim 12, the composition of which further contains an effective amount of at least one coloring agent selected from CoO, Cr₂O₃, Fe₂O₃, MnO₂, NiO, V₂O₅ and CeO₂.

16. (*Previously Presented*) The article according to claim 12, the composition of which further contains 0.03 to 1 % by weight of V₂O₅ with
$$3.8 \% \leq \text{TiO}_2 + \text{ZrO}_2 + 5\text{V}_2\text{O}_5 \leq 6 \%$$

17. (*Previously Presented*) The article according to claim 12 which does not further contain any coloring agent, wherein the Al₂O₃ content is between 19.8 and 20.5 % and ZrO₂ content is between 1.2 and 2.5 %.

IX. EVIDENCE APPENDIX

NONE

X. RELATED PROCEEDINGS APPENDIX

NONE